

Brownsea Island May 17th 2026

On a overcast day with sunny spells 11 members of the Society visited Brownsea Island, the largest of several Islands in Poole Harbour. We caught the 10 am boat from Poole Quay which gave us a good view of the Eocene Branksome Sandstone on the north side of the Island before landing at the quay.

Brownsea was originally a hill surrounded by two river valleys until the Flandrian transgression at the end of the last ice age. Between 18000 and 6000 years ago sea levels rose upto 120 m breaching the chalk hills between Isle of Wight and Purbeck and flooding the Solent river plain and Poole Harbour.



Brownsea geology consists of Eocene sediments topped with gravels and sands from the Pleistocene.

The Eocene sediments derived from a river system to the west as indicated by the ball clays at Creech and Poole derived from the Dartmoor granite. It was the search for these Ball clays which that caused a financial scandal in the 1850s as it was falsely claimed Brownsea island was rich in these valuable clays and a subsequent £1 m loan to the owner of the island was used to build a huge pottery , enlarge Brownsea castle and build the church. Failure to find Ball clays meant the pottery could only produce low quality drainage pipes from the inferior Parkstone Clay and the loan was never repaid fully.

Earlier attempts to exploit the geology of the island involved producing Copperas (Iron Sulphate) in the 16th century, a compound used in tanning leathers, dying and other uses. Copperas production is seen as the start of the Chemical Industry in the UK with copperas made around Bradford from iron pyrites in the coal measures , in Essex and Chichester harbour along with many other sites where Pyrite or its breakdown products (as on Brownsea) occurred. It wasn't until the production of Aniline dyes which didn't require a mordant in the late 19th century, that copperas production ceased though it had long stopped being made on Brownsea island.

This compound was produced on the south side of the island where we visited the cliffs via South Shore steps. On the walk there from the quay there was views across to Ballard Down and the Agglestone which the Society visited in November 2025.

In the cliffs east of the steps the clays of the Parkstone Formation could be seen incorporating large channels / lenses of sand all overlain by the Branksome Sandstone.

We saw yellow Jarosite, a hydrated Iron Sulphate coating the cliff face. It was the discovery of this mineral on Mars that showed there but had once been water on the surface of that planet.

Rarer was a waxy green mineral called Melanterite a water-soluble, and highly fragile secondary sulphate mineral ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$). Shales containing these minerals along with Iron pyrites were quarried from the cliffs and boiled in large cauldrons to make copperas.





Sandstone channels / lenses showing cross bedding of fluvial origin were seen cutting down into the possibly tidal origin Parkstone clays. Thin lignite beds and lenses were plentiful probably from tree debris washed away in floods that then rapidly deposited in the sandstones.

Some of the sandstone channels were heavily cemented with iron oxides. It appeared that some of the recent beach sand and flint gravels were also iron cemented suggesting this process of cementation is still ongoing. It has been suggested that waste fluids from the copperas works increased this cementation of the recent beach sands. Iron rich Chalybeate springs could be seen running onto the beach.



Society members walking over modern beach sands cemented by iron Oxide.

The Parkstone Clay showed Linsen or lenticular laminations of sandstone caused by thin rippled sands in the predominant clay bed. This indicates fluctuating energy environments, such as tidal flats, where alternating currents and slack water occur.

The more massively cross bedded Branksome sands could be seen coming in further east along the cliff.

After a picnic lunch at the Scout Camp the members walked to see Pottery beach composed entirely of broken drainage pipes from the pottery only a few brick kilns of which still exist.

On the way back a red squirrel was seen by a few members rounding off an agreeable day before returning to Poole on the ferry.



Bill indicating boundary between Parkstone clay and Brankstone Sand



Fallen block of laminated and cross bedded Sandstone with Iron Oxide cementation.



Pottery Beach with drainpipe shards